

The Ballard Locks

Address 3015 NW 45th Street, Seattle, WA 98107
Hours Everyday from 7am to 9pm (visitor center hours vary)
Phone 206-783-7059
Admission Free

What they are

The Hiram M. Chittenden Locks, locally known as the Ballard Locks, are located near Salmon Bay, in the canal between Lake Union and Puget Sound. This set of locks, one small and one large, was constructed between 1911 and 1917 to facilitate boat transportation of resources between the sound and Seattle's freshwater lake system. As a result, industry and residential development boomed, and today the locks are an important part of Seattle's marine culture.

What they do

A lock is a device that raises or lowers boats between two uneven elevations of water. In this case, Lake Union is only slightly higher than Puget Sound. Yet, the city was unable to build a canal connection because saltwater would spill into the lakes, upsetting the freshwater ecosystem. With locks, water transfer is controlled, so only a minimal amount of salt is transferred. Plus, immediately next to the Ballard Locks is a spillway dam that allows majority of the salt to return to the sound, while regulating the elevation of the lakes to support floating bridges, mooring facilities and under bridge clearance.

How they work

As a vessel passes from the freshwater lakes into Puget Sound, it enters the lock chamber through an open gate. After the gate closes behind the vessel, an underground draining system lowers the water until the vessel is even with the sound. Then, a gate at the front of the chamber opens to allow entrance into Puget Sound. This process is reversed for vessels moving upstream, as the chamber will be filled, instead of drained.

In approximately ten minutes, the large chamber can elevate a 760-foot by 80-foot vessel 26 feet (representing a very low tide) to the level of Salmon Bay. It is estimated that over 1 million tons of cargo passes through the locks each year.

Other attractions

Accompanying the Ballard Locks are a visitor's center, botanical garden and salmon ladder with viewing aquarium.

Relation to science and math

The locks are relevant to science in many ways, including how they protect the freshwater ecosystem of Salmon Bay, and have, arguable, created their own mini ecosystem that exists where the two separate waters now meet. Additionally, the ladders demonstrate an important part of the salmon lifecycle, and the Carl S. English Jr. Botanical Garden displays over 570 species of plants, carefully selected from locations across the globe.

The connections to math are nearly limitless, as students can calculate a variety of equations including the volume and mass of vessels, water elevation, displacement of water, speed of locking, and patterns of usage. The salmon ladder can also inspire a host of mathematical learning.

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Connecting Puget Sound with Lake Union

Passing over one million tons of cargo each year, the Ballard Locks connect the popular waterways of Puget Sound and Lake Union. Since their official dedication in 1916, the locks have become an

important part of Seattle's marine culture and represent a valuable community and learning resource. While visiting the locks, students can learn about various ecosystems; water chambers,

valves, water elevation and displacement; they can learn about the salmon migration and lifecycle; and they can study over 570 species of plants, carefully selected from locations across the globe.



SALMON LADDER



BOTANICAL GARDEN



VISITOR CENTER